

CLAIMS

We claim:

1. An acidified imitation cheese sauce composition comprising:

5 a) a thickener,

b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic by weight of the composition, and

c) a protein in an amount of less than 1% by weight of the composition, wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about

10 55% by weight of the composition, a moisture phase acidity level of not more than about 1.5%, and organoleptic properties similar to a low acid cheese sauce.

2. The composition according to claim 1, wherein the pH is about 2 to about 4.5.

3. The composition according to claim 1, wherein the pH is about 3.2 to

15 about 4.4.

4. The composition according to claim 1, wherein the moisture is present in an amount of about 60% by weight to about 95% by weight of the composition.

5. The composition according to claim 1, wherein the moisture is present in an amount of about 70% by weight to about 85% by weight of the composition.

20 6. The composition according to claim 1, wherein the thickener is selected from the group consisting of modified food starch, tapioca, potato starch, cornstarch, rice starch, alginate, carrageenan, xanthan gum, guar gum, locust bean gum, and carboxymethylcellulose (CMC).

7. The composition according to claim 6, wherein the thickener is a

25 modified food starch.

8. The composition according to claim 6, wherein the thickener is selected from the group consisting of a mixture of the modified food starch and xanthan gum, and a mixture of the modified food starch and carboxymethylcellulose (CMC).

9. The composition according to claim 8, wherein the thickener is a mixture of modified food starch and xanthan gum in a ratio of about 2:1 parts by weight to about 20:1 parts by weight.

10. The composition according to claim 1, wherein the thickener is present in an amount of about 0.1% by weight to about 30% by weight of the composition.

11. The composition according to claim 1, wherein the thickener is present in an amount of about 0.5% by weight to about 10% by weight of the composition.

12. The composition according to claim 1, wherein the thickener is present in an amount of about 0.7% by weight to about 7% by weight of the composition.

13. The composition according to claim 1, wherein the thickener is present in an amount of about 4% by weight to about 6% by weight of the composition.

14. The composition according to claim 1, wherein the moisture phase acidity level is about 0.11% to about 1.2%.

15. The composition according to claim 1, wherein the moisture phase acidity level is about 0.3% to about 0.9%.

16. The composition according to claim 1, wherein the moisture phase acidity level is about 0.5% to about 0.7%.

17. The composition according to claim 1, wherein the acidulant is selected from the group consisting of cultured dextrose, glucono- δ -lactone, phosphoric acid, and lactic acid.

18. The composition according to claim 1, wherein the acidulant is present in an amount of about 0.01% by weight to about 40% by weight of the composition.

19. The composition according to claim 1, wherein the acidulant is present in an amount of about 10% by weight to about 35% by weight of the composition.

20. The composition according to claim 1, wherein the acidulant is present in an amount of about 0.01% equivalents of glacial acetic acid by weight to about 0.4% equivalents of glacial acetic acid by weight of the composition.

21. The composition according to claim 1, wherein the acidulant is present in an amount of about 0.1% equivalents of glacial acetic acid by weight to about 0.3% equivalents of glacial acetic acid by weight of the composition.

22. The composition according to claim 1, wherein the protein has an average isoelectric point (pI) of at least about 5.

23. The composition according to claim 1, wherein the protein is one which has a buffering capacity such that an 1% solution by weight of the protein in deionized water requires no more than about 0.3 moles of acetic acid to change the pH of the solution by one pH unit.

24. The composition according to claim 1, wherein the protein is selected from the group consisting of gelatin, whey protein, soy protein, casein, egg protein, and hydrolyzed vegetable protein.

25. The composition according to claim 1, wherein the protein is present in an amount of up to about 0.7% by weight of the composition.

26. The composition according to claim 1, wherein the protein is present in an amount of about 0.2% by weight to about 0.5% by weight of the composition.

27. The composition according to claim 1, further comprising a fat.

28. The composition according to claim 27, wherein the fat is selected from the group consisting of partially hydrogenated vegetable oil, soybean oil, canola oil, sunflower oil, safflower oil, palm kernel oil, coconut oil, and butterfat.

5 29. The composition according to claim 27, wherein the fat is present as a fat phase dispersed and immobilized within the thickener.

30. The composition according to claim 27, wherein the fat is present in an amount of about 10% by weight to about 30% by weight of the composition.

31. The composition according to claim 27, wherein the fat is present in an amount of about 5% by weight to about 15% by weight of the composition.

10 32. The composition according to claim 1, wherein the composition has a Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C.

33. The composition according to claim 1, wherein the composition has a Brookfield viscosity of about 10,000 centipoise to about 30,000 centipoise at 21°C.

15 34. The composition according to claim 1, wherein the composition has a Brookfield viscosity of about 15,000 centipoise to about 20,000 centipoise at 21°C.

35. The composition according to claim 1, wherein the composition has a fracturability of about 0.29 N to about 2.9 N at 21°C.

36. The composition according to claim 1, wherein the composition has a fracturability of about 0.49 N to about 2 N at 21°C.

20 37. The composition according to claim 1, wherein the composition has a fracturability of about 0.59 N at 21°C.

38. The composition according to claim 1, further comprising a cheese flavoring.

39. The composition of claim 38, wherein the cheese flavoring is selected from the group consisting of enzyme modified cheese, enzyme modified lactile products, and synthetic flavors.

40. An acidified imitation cheese sauce composition comprising:

- a) a thickener,
 - b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition, and
 - c) a protein in an amount of less than 1% by weight of the composition,
- wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level not more than about 1.5%, and a fracturability of about 0.29 N to about 2.9 N at 21°C.

41. An acidified imitation cheese sauce composition comprising:

- a) a thickener,
- b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition, and
- c) a protein in an amount of less than about 1% by weight of the composition,
- d) wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level not more than about 1.5%, and a Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C.

42. An acidified imitation cheese sauce composition comprising:

- a) a thickener,

b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition,

c) a protein in an amount of less than about 1% by weight of the composition,
and

5 d) a cheese flavoring,

wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, and a moisture phase acidity level not more than about 1.5%.

43. An acidified imitation cheese sauce composition comprising:

10 a) a thickener,

b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition,

c) a fat, and

d) a protein in an amount of less than 1% by weight of the composition,

15 wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level not more than about 1.5%,
and a fat phase of the composition is dispersed and immobilized within the thickener.

44. An acidified imitation cheese sauce composition comprising:

a) a thickener,

20 b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition,

c) a protein in an amount of less than 1% by weight of the composition, and

d) a cheese flavoring,

e) wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level not more than about 1.5%, a Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C, and a fracturability of about 0.29 N to about 2.9 N at 21°C.

5 45. An acidified imitation cheese sauce composition comprising:

a) a thickener,
b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight, and

c) a protein in an amount of less than 1% by weight of the composition,
10 wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level of not more than about 1.5%, a Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C, and a fracturability of about 0.29 N to about 2.9 N at 21°C.

15 46. An acidified pudding composition comprising:

a) a thickener,
b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition,

c) a protein in an amount of less than 1% by weight of the composition,
20 wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level not more than about 1.5%, and organoleptic properties similar to a low acid pudding.

47. The composition according to claim 46, wherein the pH is about 2 to about 4.5.

48. The composition according to claim 46, wherein the pH is about 3.2 to about 4.4.

49. The composition according to claim 46, wherein the moisture is present in an amount of about 60% by weight to about 95% by weight of the composition.

50. The composition according to claim 46, wherein the moisture is present in an amount of about 70% by weight to about 85% by weight of the composition.

51. The composition according to claim 46, wherein the thickener is selected from the group consisting of modified food starch, tapioca, potato starch, cornstarch, rice starch, alginate, carrageenan, xanthan gum, guar gum, locust bean gum, and carboxymethylcellulose (CMC).

52. The composition according to claim 51, wherein the thickener is a modified food starch.

53. The composition according to claim 51, wherein the thickener is selected from the group consisting of a mixture of the modified food starch and xanthan gum, and a mixture of the modified food starch and carboxymethylcellulose (CMC).

54. The composition according to claim 53, wherein the thickener is a mixture of the modified food starch and xanthan gum in a ratio of about 100:0.01 parts by weight to about 95:5 parts by weight.

55. The composition according to claim 53, wherein the thickener is a mixture of the modified food starch and carboxymethylcellulose (CMC) in a ratio of about 80:20 parts by weight to about 95:5 parts by weight.

56. The composition according to claim 46, wherein the thickener is present in an amount of about 0.1% by weight to about 30% by weight of the composition.

57. The composition according to claim 46, wherein the thickener is present in an amount of about 0.5% by weight to about 10% by weight of the composition.

58. The composition according to claim 46, wherein the thickener is present in an amount of about 0.7% by weight to about 7% by weight of the composition.

5 59. The composition according to claim 46, wherein the thickener is present in an amount of about 4% by weight to about 6% by weight of the composition.

60. The composition according to claim 46, wherein the moisture phase acidity level is about 0.11% to about 1.2%.

10 61. The composition according to claim 46, wherein the moisture phase acidity level is about 0.3% to about 0.9%.

62. The composition according to claim 46, wherein the moisture phase acidity level is about 0.5% to about 0.7%.

15 63. The composition according to claim 46, wherein the acidulant is selected from the group consisting of cultured dextrose, glucono- δ -lactone, phosphoric acid, and lactic acid.

64. The composition according to claim 46, wherein the acidulant is present in an amount of about 0.01% by weight to about 40% by weight of the composition.

65. The composition according to claim 46, wherein the acidulant is present in an amount of about 10% by weight to about 35% by weight of the composition.

20 66. The composition according to claim 46, wherein the acidulant is present in an amount of about 0.01% equivalents of glacial acetic acid by weight to about 0.4% equivalents of glacial acetic acid by weight of the composition.

67. The composition according to claim 46, wherein the acidulant is present in an amount of about 0.1% equivalents of glacial acetic acid by weight to about 0.3% equivalents of glacial acetic acid by weight of the composition.

68. The composition according to claim 46, wherein the protein has an average isoelectric point (pI) of about at least 5.

69. The composition according to claim 46, wherein the protein is one which has a buffering capacity such that a 1% solution of the protein in deionized water requires at least no more than about 0.3 moles of acetic acid to change the pH of the solution by one pH unit.

70. The composition according to claim 46, wherein the protein is selected from the group consisting of gelatin, whey protein, soy protein, casein, egg protein, and hydrolyzed vegetable protein.

71. The composition according to claim 46, wherein the protein is present in an amount of up to about 0.7% by weight of the composition.

72. The composition according to claim 46, wherein the protein is present in an amount of about 0.2% by weight to about 0.5% by weight of the composition.

73. The composition according to claim 46, further comprising a fat.

74. The composition according to claim 73, wherein the fat is present in a fat phase dispersed and immobilized within the thickener.

75. The composition according to claim 73, wherein the fat is selected from the group consisting of partially hydrogenated vegetable oil, soybean oil, canola oil, sunflower oil, safflower oil, palm kernel oil, coconut oil, and butterfat.

76. The composition of claim 73, wherein the fat is present in an amount up to about 5% by weight of the composition.

77. The composition of claim 73, wherein the fat is present in an amount of about 2% by weight to about 4% by weight of the composition.

78. The composition according to claim 46, wherein the composition has a Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C.

5 79. The composition of claim 46 having a Brookfield viscosity of about 10,000 centipoise to about 30,000 centipoise at 21°C.

80. The composition of claim 46, wherein the composition has a Brookfield viscosity of about 15,000 centipoise to about 20,000 centipoise at 21°C.

10 81. The composition of claim 46, wherein the composition has a fracturability of about 0.29 N to about 2.9 N at 21°C.

82. The composition of claim 46, wherein the composition has a fracturability of about 0.49 N to about 2 N at 21°C.

15 83. The composition of claim 46, wherein the composition has a fracturability of 0.59 N at 21°C.

84. The composition according to claim 46, further comprising a flavoring that imparts a non-savory, dessert flavor to the composition.

85. The composition of claim 84, wherein the flavoring is selected from the group consisting of chocolate, vanilla, fudge, butterscotch, and banana.

86. The composition according to claim 46, further comprising a sweetener.

20 87. The composition according to claim 86, wherein the sweetener is selected from the group consisting of sucrose, fructose, corn syrup, aspartame, and sucralose.

88. An acidified pudding composition comprising:

a) a thickener,

b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition, and

c) a protein in an amount of less than 1% by weight of the composition, wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level not more than about 1.5%, and a fracturability of about 0.29 N to about 2.9 N at 21°C.

89. An acidified pudding composition comprising:

a) a thickener,

b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition, and

c) a protein in an amount of less than 1% by weight of the composition, wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level not more than about 1.5%, and a Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C.

90. An acidified pudding composition comprising:

a) a thickener,

b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition,

c) a protein in an amount of less than 1% by weight of the composition, and

d) a flavoring that imparts a non-savory, dessert flavor to the composition, wherein the composition has a pH of about 4.6 or less, moisture in an amount of at least about 55% by weight of the composition, and a moisture phase acidity level not more than about 1.5%.

91. An acidified pudding composition comprising:

a) a thickener,
b) an acidulant in an amount not greater than about 0.5% equivalents of
glacial acetic acid by weight of the composition,

c) a fat, and

5 d) a protein in an amount of less than 1% by weight of the composition,
wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about
55% by weight of the composition, a moisture phase acidity level not more than about 1.5% or
less, and a fat phase of the composition is dispersed and immobilized within the thickener.

92. An acidified pudding composition comprising:

10 a) a thickener,
b) an acidulant in an amount not greater than about 0.5% equivalents of
glacial acetic acid by weight of the composition,
c) a protein in an amount of less than 1% by weight of the composition, and
d) a flavoring that imparts a non-savory, dessert flavor to the composition,

15 wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about
55% by weight of the composition, a moisture phase acidity level not more than about 1.5%, a
Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C, and
a fracturability of about 0.29 N to about 2.9 N at 21°C.

93. An acidified imitation pudding composition comprising:

20 a) a thickener,
b) an acidulant in an amount not greater than about 0.5% equivalents of
glacial acetic acid by weight of the total composition,
c) a protein in an amount of less than 1% by weight of the composition, and

d) a Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C,
wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level of not more than about 1.5%,
5 and a fracturability of about 0.29 N to about 2.9 N at 21°C.

94. An acidified imitation pudding composition comprising:

- a) a thickener,
- b) an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition,
- 10 c) a protein in an amount of less than 1% by weight of the composition, and
- d) a sweetener,

wherein the composition has a pH of not more than 4.6, moisture in an amount of at least about 55% by weight of the composition, a moisture phase acidity level not more than about 1.5%, a Brookfield viscosity of about 5,000 centipoise to about 50,000 centipoise at 21°C, and a
15 fracturability of about 0.29 N to about 2.9 N at 21°C.

95. A method of preserving an imitation cheese sauce, the method comprising the steps of:

- a) preparing a composition comprising moisture in an amount of at least about 55% by weight of the composition, a thickener, a protein in an amount of less than 1% by
20 weight of the composition, and a cheese flavoring, and
- b) acidifying the composition to a pH of not more than 4.6 by addition of an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight of the composition, such that the imitation cheese sauce has an increased microbial stability,

wherein the resulting composition is one which has organoleptic properties similar to a low acid cheese sauce.

96. A method for increasing the microbial stability and shelf-life of an imitation cheese sauce, the method comprising the steps of:

5 a) preparing a composition comprising moisture in an amount of at least about 55% by weight of the composition, a thickener, a protein in an amount of less than 1% by weight of the composition, and a cheese flavoring, and

b) acidifying the composition to a pH of not more than 4.6 by addition of an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic acid by weight,
10 such that the imitation cheese sauce has an increased microbial stability,
wherein the resulting composition is one which has a fracturability of about 0.29 N to about 2.9 N at 21°C.

97. A method of preserving a pudding, the method comprising the steps of:

a) preparing a composition comprising moisture in an amount of at least
15 about 55% by weight of the composition, a thickener, a protein in an amount of less than 1% by weight of the composition, and a flavoring that imparts a non-savory, dessert flavor to the composition, and

b) acidifying the composition to a pH of not more than 4.6 or less by
addition of an acidulant in an amount not greater than about 0.5% equivalents of glacial acetic
20 acid by weight, such that the pudding has an increased microbial stability,
wherein the resulting composition is one which has organoleptic properties similar to a low acid pudding.

98. A method for increasing the microbial stability of a pudding, the method comprising the steps of:

a) preparing a composition comprising moisture in an amount of at least about 55% by weight of the composition, a thickener, a protein in an amount of less than 1% by weight of the composition and a flavoring that imparts a non-savory, dessert flavor to the composition, and

5 b) acidifying the composition to a pH of not more than 4.6 by addition of an acidulant in an amount of about not greater than 0.5% equivalents of glacial acetic acid by weight, such that the pudding has an increased microbial stability, wherein the resulting composition has a fracturability of about 0.29 N to about 2.9 N at 21°C.

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